

CLAIMS

1. A method for evaluating a physical object comprising the steps of:
 - 5 - reading the instructions of a macro,
 - said macro suitable for use with measurement equipment capable of performing measurements of a physical object,
 - said macro comprising instructions for said equipment to perform an evaluation of a physical object,
 - 10 - performing the instructions of said macro upon a numerical representation of the surface of said object, and
 - obtaining from the results of the macro, an evaluation of the physical object.
2. Method according to claim 1 wherein said numerical representation of the surface is obtained by scanning part or all of the physical object using an object scanner.
- 15 3. Method according to claims 1 and 2 wherein said numerical representation of the surface is any of point cloud data, triangulated mesh data, rendered surface data, or polyline data.
- 20 4. Method according to any of claims 1 to 3 wherein said measurement equipment is a Coordinate Measuring Machine, CMM.
5. Method according to any of claims 1 to 4 wherein said macro comprises Dimensional Measuring Interface Standard, DMIS, commands.
- 25 6. Method according to any of claims 1 to 5 wherein said macro comprises CMM commands.
- 30 7. Method according to any of claims 1 to 6 whereby said evaluation is communicated by part of a DMIS-measurement program or by using DMIS commands format.
8. Method according to any of claims 1 to 7 whereby the said evaluation is communicated in the format of CMM measurement results.

9. Method according to any of claims 1 to 8 wherein the instructions of said macro that are performed relate to the measurement of data from the numerical representation of the surface.

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10. Method according to any of claims 1 to 9 wherein translations through the surface of the object may be performed by the method.

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11. Method according to any of claims 1 to 10 wherein a measurement comprises the steps of:

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(a) determining those elements of data numerically representing the object, that correspond to the position on the physical object to be measured, without increasing the resolution by calculating the co-ordinates of any additional points,

(b) calculating by interpolation of the elements determined in step (a) additional points in the area of the position to be measured, so increasing the resolution therein,

(c) calculating from the higher-resolution area determined in step (b) a measurement of the object.

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12. Method according to any of claims 1 to 11 wherein one or more instructions of said macro have been created by using said numerical representation of the physical object.

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13. Method according to claim 12 wherein said instructions are recorded to the macro by way of a DMIS-measurement program or using the DMIS commands format.

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14. Method according to claims 12 or 13 wherein said instructions are part of a measurement sequence generated by recording commands of a Coordinate Measuring Machine measurement program.

15. Method according to any of claims 12 to 14 in which the said instructions are part of a measurement sequence in a Coordinate Measuring Machine measurement program.

16. Method according to any of claims 1 to 15 wherein said evaluation comprises the execution of steps on a computer in an automatic way without interaction with the user of said computer during the execution of the said steps.
- 5 17. Method for virtually measuring an object using a cloud of points virtually representing the said object and calculating the value or values that approximates the value or values that would result from the measurement of the said object by a measuring device.
- 10 18. Method for virtually probing an object using a cloud of points virtually representing the said object and calculating or selecting the point that approximates the point that would result from the probing of a CMM on the said object.
- 15 19. A computer program stored on a computer readable medium capable of performing the method according to any of claims 1 to 18.
- 20 20. A computer program according to claim 19 further comprising the ability to receive a numerical representation of the physical object from a remote computer.
- 25 21. A computer program according to claim 20 wherein the numerical representation is received from the remote computer across any of the Internet, email, wireless link, public switched telephone network, ISDN, satellite link, or by physical transport of a computer readable storage medium holding said numerical representation.
22. A computer program according to claim 21 wherein said computer readable storage medium is any of optical disk, magnetic disk, optic-magnetic disk, magnetic tape.
- 30 23. A computer program according to any of claims 19 to 22, further comprising the ability to display a user interface on a web browser of a remote computer connected to the Internet, said interface allowing a user to send a numerical representation of the physical object over the Internet to said method.

24. A computer program according to any of claims 19 to 23 further comprising the ability to display a user interface on a web browser of a remote computer connected to the Internet, said interface allowing a user to send said macro over the Internet to said method.

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25. A computer program according to any of claims 19 to 24 further comprising the ability to display a user interface on a web browser of a remote computer connected to the Internet, said interface allowing a user to send the title of said macro or an indication thereof over the Internet to said method.

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26. A computer program according to any of claims 19 to 25 further comprising the ability to display a user interface on a web browser of a remote computer connected to the Internet, said interface allowing a user to receive an evaluation report of a physical object generated by said method.

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27. A computer program according to any of claims 19 to 26 further comprising the ability to display a pay-per-use interface on a web browser of a remote computer connected to the Internet, said pay-per-use interface capable of one or more of the following:

(a) requesting and/or providing a username and password to the remote

20 computer user, to enable a user to access an account for using the method,

(b) requesting billing information of the remote computer user,

(c) indicating a billing amount to the remote computer user, relating to the number of evaluations performed.

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28. A device capable of performing a method of any of claims 1 to 18 comprising,

- means for reading the instructions of a macro,

- said macro suitable for use with measurement equipment capable of performing measurements of a physical object,

- said macro comprising instructions for said equipment to perform an evaluation of a physical object,

30 - means for performing the instructions of said macro upon a numerical representation of the surface of said object, and

- means for obtaining from the results of the macro, an evaluation of the physical object.

29. A device according to claim 28, that is a piece of measurement equipment capable of
5 performing measurements of a physical object.

30. A piece of measurement equipment according to claim 29, wherein said equipment is a CMM.